

completed the operation, and had the most gratifying result that I have yet witnessed.

Cordotomy in a patient who has already had subarachnoid injections of alcohol is fraught with danger. The combination is very likely to cause a permanent flaccid incontinence of bladder and bowel. It is unwise to employ the alcohol injection unless there is no likelihood of cordotomy ever being required.

Neurosurgical relief of the intractable pains of cancer is usually requested at too late a stage. The time to consider such treatment is when the pain becomes so severe that it does not respond completely to moderate sedation.

RÉSUMÉ

Contre les douleurs dues aux diverses formes du cancer le neurochirurgien a à sa disposition les injections intra-

nerveuses d'alcool, l'injection sous-arachnoidienne d'alcool, les sections de nerfs et la cordotomie. En général, ces procédés sont utilisés chez les malades dont les douleurs sont situées à la tête ou au cou, ou encore, au bassin, aux lombes et aux membres inférieurs. Le choix de l'opération est affaire de localization et de prévision de succès. Le problème est complexe car les voies de la douleur dépassent souvent les avenues traditionnelles. On se contente parfois d'un confort relatif et d'une simple diminution des algies, surtout à la bouche et au cou. Tous les nerfs ne peuvent pas être bloqués par l'alcool; parfois il faut injecter l'alcool dans le ganglion lui-même comme c'est le cas lorsque le cancer détermine des névralgies rebelles du trijumeau. Dans les grosses lésions cancéreuses de la joue, on fait la section rétro-gassérienne. On fait encore la tractotomie du V et du IX, et à la région cervicale la rhizotomie postérieure. Le blocage sous-arachnoidien à l'alcool n'assure pas de garantie absolue d'anesthésie et donne des ennuis sphinctériens. Seule la cordotomie enlève radicalement les douleurs sans paralyser la vessie et le rectum. Il faut opérer dès que la douleur n'est plus calmée par les sédatifs habituels.

JEAN SAUCIER

INTERSTITIAL CYSTITIS*

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THE term we have chosen to use for this condition, which has been referred to in the literature under a host of names, is probably the most ancient of them all, for Skene in 1887 reported a few cases of a rare bladder disease, which he called "interstitial cystitis". Mercier and Le Fur, of France, in 1907 described some cases which we now believe to be the same condition. About the same time, Nitze, of Germany, described it under "cystitis parenchymatosa". It remained for Hunner in 1909 first to recognize these cases as a clinical entity, and he published his first paper in 1915, using the term "elusive ulcer". Kretschmer in 1920 reported his results in 14 cases, using Hunner's term "elusive ulcer". Since that time he has been the most prominent and enthusiastic writer on this subject. It is probably safe to say that nothing has been added to Hunner's original description of this condition, and that progress has been along the lines of therapy and the more frequent recognition of the disease. It is not a true ulcer of the bladder, and it is not elusive.

ETIOLOGY

It is a disease of adult life, occurring mostly in females between the ages of 40 to 60 years; we have had no cases under 40 years, and our average is 48 years. Its incidence in males is

variously quoted from zero to 15 per cent. To date we have found no cases in the male.

Hunner originally thought that the cause of interstitial cystitis was a focus of infection somewhere else in the body, and also attributed many cases to an initial granular urethritis. Herbst has delved deeper into etiology than most, having done some experimental work on dogs in 1937. In a number of animals he ligated the vessels of the posterior wall and vertex on the external aspect of the bladder. To this area he then sutured the vagina and uterine horns, first scraping the external surface of the bladder to encourage adhesions. In some cases he placed an infected spicule of bone from a tooth abscess (*S. viridans*) between the sutured organs, and he was able to produce a lesion that resembled interstitial cystitis both cystoscopically and histologically. In no case did the infective process from the bone spicule penetrate the serosa of the bladder wall. Whether these experiments produced the genuine disease or not, it seems to us they are based on a sound hypothesis, for all workers have found this condition occurring predominantly in females. Also, they have often undergone at least one, and sometimes several, pelvic or abdominal operations. Although these have been thought due to errors in diagnosis, it may be possible in some cases that they are an etiological factor in the disease. From all this it would seem that we are still

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groping in the dark as to a primary single cause of interstitial cystitis, if there be one.

PATHOLOGY

We have discovered no autopsy report of these cases, and therefore must rely on the pathological report on specimens removed at operation. Since surgical intervention is seldom if ever warranted, we have no such specimen of our own, but will here give the consensus in the literature as to the pathology.

It is a picture of chronic inflammation, involving all the bladder coats, and, although it has generally been described as being localized to the involved area in the region of the vault, Higgins points out that the bladder wall generally, exclusive of the trigone, is involved to a lesser degree by the same process. At the site of the ulcer-appearing area there is either loss of epithelium or replacement of the transitional cell type by a flattened type. The loose areolar tissue of the normal submucosa is replaced by fibrous connective tissue containing numerous capillaries and lymph spaces. These are engorged with red blood cells and leucocytes, and there is much round cell infiltration. A thick basement membrane is often described. The muscularis is usually involved, being hypertrophied and containing in its interstitial tissues enlarged lymph spaces filled with small round cells. It has rarely been noted that the disease process affected the perivesical tissues, but occasionally there are peritoneal adhesions present.

SYMPTOMS

Frequency	100	per cent
Suprapubic ache or pain	100	" "
Urgency	80	" "
Dysuria	40	" "
Hæmaturia (gross)	20	" "
" (microscopic)	75	" "

Rarely is there a patient who has not been treated by other physicians; if a female, she has probably undergone one or more pelvic or intra-abdominal operations. Often, also, she may have had one or more cystoscopic examinations, and has been assured that there is no disease of the urinary tract.

Frequency of urination is the paramount symptom and is essential to the diagnosis. In few other conditions do patients have such severe frequency, often voiding every 20 minutes.

Next in order is urgency, which in some cases almost amounts to incontinence. It is usually associated with suprapubic pain; in fact we have not encountered a single case that did not have

this latter symptom. It is due to this pain, which may also be referred to the rectum, back, or lower abdomen, that many undiagnosed cases undergo useless operations before the true state of affairs is discovered.

Dysuria is a variable complaint occurring in about one-third of the cases. As with suprapubic distress it is relieved temporarily by micturition.

Hæmaturia is an infrequent sign, although by no means an infrequent finding microscopically. It probably only occurs in the acute stage of the disease.

The duration of all or any of the above symptoms does not seem to be of any diagnostic value, although rarely is a case diagnosed early. We have encountered no cases with a history under two years' duration; the average in our series was four and a half years.

SIGNS AND CYSTOSCOPIC FINDINGS

Physical signs are conspicuous by their absence, and those present are not always typical of any disease. For the most part these patients are very nervous persons, who have previously been classified as neurotics (who would not be a nervous wreck if she had to void every 20 to 30 minutes for months or even years?). As a rule they are in fairly good health apart from the bladder condition.

The urological examination generally reveals a clear urine, which may or may not contain some microscopic blood. The presence of pus in the urine suggests that it is not an interstitial cystitis. Hinman states that only 20 per cent of his cases were infected; these he attributed to previous treatment or instrumentation, and with this idea we agree.

The bladder capacity is the most valuable single sign, and its estimation routinely in all females with bladder symptoms and a negative urine is important. A bladder capacity of 150 c.c. or less, and a negative urine is very suggestive of interstitial cystitis; a capacity of over 250 c.c. makes the diagnosis improbable. The capacity may be easily measured by filling the bladder by catheter until the desire to void becomes urgent, and then measuring all the fluid that can be drained off.

At cystoscopic examination a distinction must be made between the picture found in the acute stage and that in the chronic phase of the disease. Most descriptions of the lesion concern the former—we have only seen three such cases.

It would appear that the term "elusive ulcer" was probably first used to describe this acute picture.

An anaesthetic will be necessary if the lesion is to be well demonstrated, otherwise sufficient bladder distension will not be tolerated. The trigone including the ureteral orifices is never involved, but the vault in the region of the air bubble is the site of predilection.

In an acute case there are one or more small areas in the bladder mucosa having the appearance of a red welt. These tend to have a linear shape. In chronic cases these areas are rarely single and appear as blanched patches of scarring. If the bladder is gradually distended they bleed freely, especially if acute, and the mucosa will form bleeding cracks radiating away from the lesion. To a lesser degree this is what occurs every time the patient's bladder becomes slightly distended, causing pain and urgency. When these areas and mucosal cracks heal, pale scarred patches with radiating lines of mucosal scarring occur. This will give a variety of pictures in the late cases. It is thought that often these lesions heal completely, at least superficially, accounting for the occasional absence of cystoscopic findings in a clinically typical case.

The neighbouring bladder mucosa is of normal appearance, but if the bladder is distended very much before its complete inspection the field will be obscured by blood, in all but the very chronic cases.

DIFFERENTIAL DIAGNOSIS

Tuberculosis may be thought of on account of the frequency of urination, hæmaturia, and sterile urine culture, but cases of renal tuberculosis in the absence of pyuria are few and far between. The upper urinary tract never shows any secondary involvement in true interstitial cystitis.

The cystoscopic picture and small bladder capacity might be found in cases of chronic infective cystitis, but the presence of pyuria places it in its proper category.

Differentiation from the "iceberg" type of vesical carcinoma may be impossible except by biopsy.

The other causes of so-called "bladder neuromes" must be ruled out, such as stricture of the urethra, various types of trigonitis, and stricture of the ureter. These conditions may have a clear urine and similar symptoms to

interstitial cystitis, and it will require routine genito-urinary examination to rule them out.

TREATMENT

When Hunner first described this disease he advocated resection of the ulcer-bearing area, but a few years later reported about 50 per cent recurrence. Kretschmer reports 50 per cent recurrence, while Engel states that he had 100 per cent recurrence in 5 cases resected. It is the general opinion today that they will all recur after excision, due to the extent of the lesion, which may involve over half of the bladder wall.

Hunner then advocated silver nitrate instillation in increasing strengths up to 1 per cent. Of late he is using instillations of pure carbolic acid. These instillations of caustic substances have not become very popular with either the surgeons or the patients, since it is a rather heroic procedure giving only temporary results.

Alexander and Christie in 1936 experimented with dogs, using submucous injections of alcohol. They found the result to be necrosis with fibrous tissue development and scar-formation. It has been used cystoscopically by Hinman and others in the treatment of this disease, but we fail to see its advantages over other methods. It may be of use in early acute cases to relieve the pain temporarily, and encourage the submucosal fibrosis that is the natural course of the disease.

Injection in the paravertebral sympathetic chain has been performed by Engel, with no results; and Braasch *et al.* have done a presacral neurectomy on a number of cases with practically 100 per cent failure to get a permanent result.

As with all chronic conditions of the bladder transplantation of the ureters has occasionally been performed.

Our routine treatment in these cases consists of gradual dilatation of the bladder under spinal anaesthesia by hydrostatic pressure. At the same time the bladder mucosa is inspected cystoscopically, and, if the condition is acute, any typical lesions that appear are fulgurated superficially with the electrode. We agree with Hinman that deep fulguration is not only useless but also dangerous.

In the later cases, dilatation alone is usually successful, and the patients are advised to return for repeated dilatation if the symptoms recur. The average number of treatments in our series was three. If the diagnosis is correct the results

are immediate, and the day following the operation the patient will notice a marked improvement. A course of short wave therapy to the bladder region is then begun.

The patient must be warned that the symptoms will most likely recur in a matter of weeks or months, and that a permanent cure must not be expected following one treatment.

PROGNOSIS

In reviewing the literature it seems that a very small number of cases have been followed throughout their lifetime, but on the average about 20 per cent of cases have been pronounced cured, and about 30 per cent have been pronounced unimproved, using all types of treatment. Three cases of carcinoma of the bladder occurring at the site of this lesion have been reported. To date we have had no patient who was not in some measure improved following

our routine, even though in many cases the symptoms began to recur within a couple of months.

SUMMARY

Interstitial cystitis occurs most frequently in females over the age of 40 years.

The chief complaints are frequency and urgency of urination and suprapubic pain.

Urinalysis is essentially negative except for microscopic blood.

There are many forms of treatment, but we prefer overdistension of the bladder under anaesthesia, plus superficial fulguration in acute cases, and short wave therapy.

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SERIOUS INJURY TO THE RECTUM FROM IMPROPERLY ADMINISTERED ENEMAS*

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THAT the rectum may sustain serious injury as the result of an improperly administered enema is not well recognized in the American literature; the English literature on the other hand contains more numerous references to this accident.

In the experience of most observers who have written on this subject, the most essential factor in the production of the injury is the use of a hard nozzle, usually of bone, hard rubber or metal, and several inches in length. Since such nozzles are usually attached to syringes or rubber bulbs, the pressure with which the enema is given becomes another important consideration. The injury may be caused by first sucking the rectal mucous membrane into the opening or openings of the tube. The relatively insensitive rectum will cause little or no complaint on the part of the patient, and hence the enema fluid may be injected into the lacerated rectum. Irrevocable damage may thus result, for it may

be hours or days, as has been noted by others, before the patient may complain of severe pain, which by this time is usually referred either to the abdomen or to the rectum or perineum. A rectal examination may at this time give a clue to the true nature of the complaint.

Local factors, such as hæmorrhoids, polyps, prolapse, may contribute to the production of this accident. The experience of the person administering the enema may also play some part. Rayner has drawn attention to the medico-legal aspects of the problem, for in some instances where trauma resulted, the enema or irrigation was administered by a person considered competent.

Following the injury, the injected fluid may escape through the injured rectum either directly into the peritoneal cavity, or the pressure of the syringe may strip the anal and rectal mucosa and the fluid may dissect its way over a large portion of the bowel, the extent depending, of course, on the amount of fluid injected (Rayner). The injected fluid may also take the course of the fascial planes; sloughing of the rectal mucosa may also occur.

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